

QUANTUM MECHANICS: 44 ADMISSIBLE QUESTIONS? -NOT ONLY FAPP-

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ABSTRACT. The words: determinism, hidden variables, subjectivism, information, objectivism, informational-theoretic axioms, observers have some connection with physical reality? What we mean with "description" of physical reality? When we say that we understand this reality? Certain parameters: position, velocity are sufficient? We will focus only to conceptual considerations regarding the relation between the "questions" and the relative "answers" in general and specifically in quantum mechanics. It is usually believed that the answers are more important of the questions, for this reason we can read many answers everywhere and in different field of knowledge. We need to add and clarify some things: (i) usually an answers require a question, (ii) but, as we know, their relation is not so simple and immediate, (iii) For instance: a) an epistemic questions give us ontic answers? b) the answer has a connection with the question and vice versa? c) we could to infer a question starting from an answer? d) there are answers without questions? These answers could be in some framework considered as ontic answers? The relative scientific works are the same time ontic? Speaking of quantum mechanics we see around many answers in the meantime we do not see the correspondent questions, these answers seem completely independent, and this seem a right road, the road of the independent nature unlinked from human thoughts. We retain instead that questions can affect the possible answers. Exist "something" before the question?

1. A GOOD NEWS: A BRIEF PAPER WITHOUT ANSWERS

- (1) Quantum theory describe physical reality?
- (2) Wavefunction is only a mathematical expression for evaluating probabilities?
- (3) The wavefunction is not an objective entity?
- (4) The time dependence of the wavefunction does not represent the evolution of a physical system?
- (5) What the collapse of the wave function mean?
- (6) What causes it?
- (7) What is a measurement?
- (8) How does physics to describe reality?
- (9) The interpretation is merely philosophical bias, and therefore no part of physics.
- (10) The wave function is said to refer exclusively to a human mind and not any physical system external to that mind?
- (11) Theoretical terms are never directly observable?
- (12) Determinism has a connection with the physical reality?

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- (13) Why we can ask about the problem of hidden variables? It is admissible this question?
- (14) Is the above question supported by some tacit assumption? Before the question, already we have in mind a picture of the physical reality?
- (15) We understand better the physical reality with hidden variables?
- (16) It is possible have the hidden of the hidden variables? In that case the nature will be more intelligible?
- (17) It is admissible the link between determinism and the hidden variables?
- (18) Which is the nature of the Probability?
- (19) Why we introduce the notion of probability?
- (20) What is the probability of a single object?
- (21) Probability is merely a collective term?
- (22) How we introduce the properties of an object?
- (23) The properties of a single object are the same of an ensemble (of the same) objects?
- (24) We need to assume the existence of the observers?
- (25) How is the information content of a system quantified?
- (26) How is information transferred?
- (27) What is the physical status of information?
- (28) What role, if any, can an information-theoretic analysis of a physical phenomenon play in an explanation of a physical phenomenon?
- (29) The information is something of physical(ontological problem)?
- (30) Any theorem is valid only for a fixed system of axioms? Why?
- (31) It is possible to have another axiomatic of quantum mechanics?
- (32) Where the GRW-collapse occur?
- (33) The standard view: an ontic measurement of an epistemic reality?
- (34) Classical ensemble probability could not work for ensembles of quantum systems?
- (35) Which is the origin of the randomness?
- (36) Which is the statute of quantum realism?
- (37) It is admissible an holistic nature of wavefunction?
- (38) It is possible a distinction within a quantum state between ontic and epistemic elements?
- (39) Is the brain a quantum system?
- (40) Have quantum mechanical isolated systems a physical meaning?
- (41) The geometry could eliminate the observers?
- (42) Quantum information exist?
- (43) Probability require indistinguishability?
- (44) Physical Systems vs. Conceptual Systems?

2. CONCLUSION

The pretext of 44 questions is only to affirm the importance of the "questions" in our research, probably some questions listed above will be: a) inadmissible b) of metaphysical nature c) with simple answers.

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